SECTION 4.0
EXISTING ENVIRONMENTAL CONDITION

SECTION 4.0

EXISTING ENVIRONMENTAL CONDITION

4.1 INTRODUCTION

This section provides a description of the existing physical, natural, and human environment within the Double Eagle II Airport study areas established for this Master Plan.

For the purposes of describing the existing conditions, two study areas were developed. For environmental considerations in this Master Plan that deal with broad, indirect issues, a "Generalized Study Area" (GSA) was used to describe features. The GSA includes a large geographic area and was established based on the estimated extent of the future flight tracks and potential impacts that may occur in the future to surrounding communities. The GSA includes portions of Bernalillo County, the City of Albuquerque, and the surrounding communities. The "Detailed Study Area" (DSA) was similarly established for environmental considerations that deal with more specific, direct issues such as noise-sensitive land uses, wetlands, floodplains, protected species, and biotic communities. The DSA includes Double Eagle II Airport and the area immediate surrounding the airport property. The DSA represents those areas in the immediate vicinity of the airport. The GSA and the DSA are depicted on Figure 4.1.

4.2 HUMAN ENVIRONMENT

4.2.1 Land Use, Local Governments, and Demographics

4.2.1.1 Land Use and Local Governments

The GSA includes a portion of the City of Albuquerque and Bernalillo County. Double Eagle II Airport is located west of the Albuquerque metropolitan area. The Petroglyph National Monument is located adjacent to Double Eagle II Airport, while further to the east and north of I-40 currently includes single-family and multi-family residential, public and institutional, parks and recreation, transportation and utilities, drainage and flood control, and commercial retail and service land use designations. A majority of the GSA to the north, west, and south of Double Eagle II Airport is currently designated as vacant (77 percent). The Soil Amendment Facility and Shooting Range State Park are located west of Double Eagle II Airport.

The DSA includes a section of the City of Albuquerque and Bernalillo County and has three designated land uses. These include transportation and utilities, parks and recreation, and vacant. A portion of the Petroglyph National Monument is located in the eastern part of the DSA, while the Soil Amendment Facility and the Shooting Range Park are west of Double Eagle II Airport.

The City of Albuquerque also owns additional Open Space Trust Lands within the DSA. The Open Space Division is currently finalizing a trade with the City of Albuquerque Aviation Department for the lands at the northwest corner of the DSA and the lands in a triangle-shaped section of the southeast section of the DSA.

Land use distribution within the GSA and the DSA is depicted on Figure 4.2 and listed in Table 4.1.

TABLE 4.1
LAND USE WITHIN THE GENERALIZED AND DETAILED STUDY AREAS
Double Eagle II Airport
Master Plan Study

Land Use Classification	Generalized Study Area		Detailed Study Area	
	Acres	Percentage	Acres	Percentage
Agriculture	473.29	0.54%	-	-
Commercial (Retail and Service)	697.59	0.79%	-	-
Drainage and Flood Control	1,175.84	1.34%	-	-
Industrial and Manufacturing	206.65	0.24%	-	-
Multi-Family	311.47	0.35%	-	-
Parking Lots and Structures	158.00	0.18%	-	-
Parks and Recreation	8,805.85	10.01%	954.46	14.04%
Public Institutional	604.68	0.69%	-	-
Single Family	5,729.06	6.52%	-	-
Transportation and Utilities	1,234.06	1.40%	804.13	11.83%
Vacant/Other	68,478.23	77.88%	5,040.91	74.14%
Wholesale and Warehousing	58.36	0.07%	-	-
Total	87,933.08	100.00%	6,799.50	100.00%

Note: Quail Ranch and Westland land uses are based upon drawings of proposed future land uses and as such have not been included in this table.

Source: City of Albuquerque, 2001.
URS Corporation, 2001.

4.2.1.2 Population Demographics

Population demographics for the GSA are listed in Table 4.2. These data were obtained from the 1990 U.S. Census and help provide an overall picture of the demographic make-up in the GSA. Total population within the GSA is approximately 80,682 people. In terms of racial make-up, approximately 55,561 (68 percent) persons are White, 2,002 (3 percent) are Black, 3,373 (4 percent) are American Indian, 649 (0.8 percent) are Asian or Pacific Islander, and 19,097 (24 percent) are designated as "Other Race."

In addition, according to the 1990 U.S. Census, all listed races include persons of Hispanic origin. The GSA has 45,974 persons of Hispanic origin.

Table 4.2 also lists various other demographic data for the GSA including age diversification, housing units, and household income.

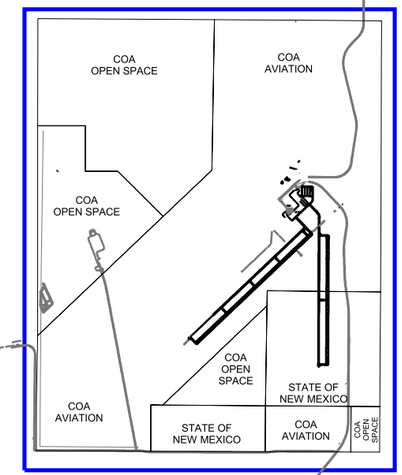
Field investigations conducted on March 30, 2001 indicate that the only permanent residential dwellings within the DSA consist of the Bernalillo County Department of Corrections (BCDC) facility to the west of the airport.

4.2.2 Socioeconomics

The New Mexico Economic Development Department internet site summarizes economic data for each county in New Mexico. In June 2000, Bernalillo County had a civilian labor force of 297,757 persons. This total includes 284,326 employed persons and 13,431 unemployed persons. The data also concludes that Bernalillo County had a 4.5 percent unemployment rate.

Figure 4.1

Generalized and Detailed Study Area



Rio Grande

25

40

40

Legend

Study Areas

- Generalized Study Area
- Detailed Study Area

Transportation

- I-25, I-40
- Other Roads

0 1 Miles

Source: Bernalillo County
Note: COA = City of Albuquerque

Double Eagle II Airport
Master Plan

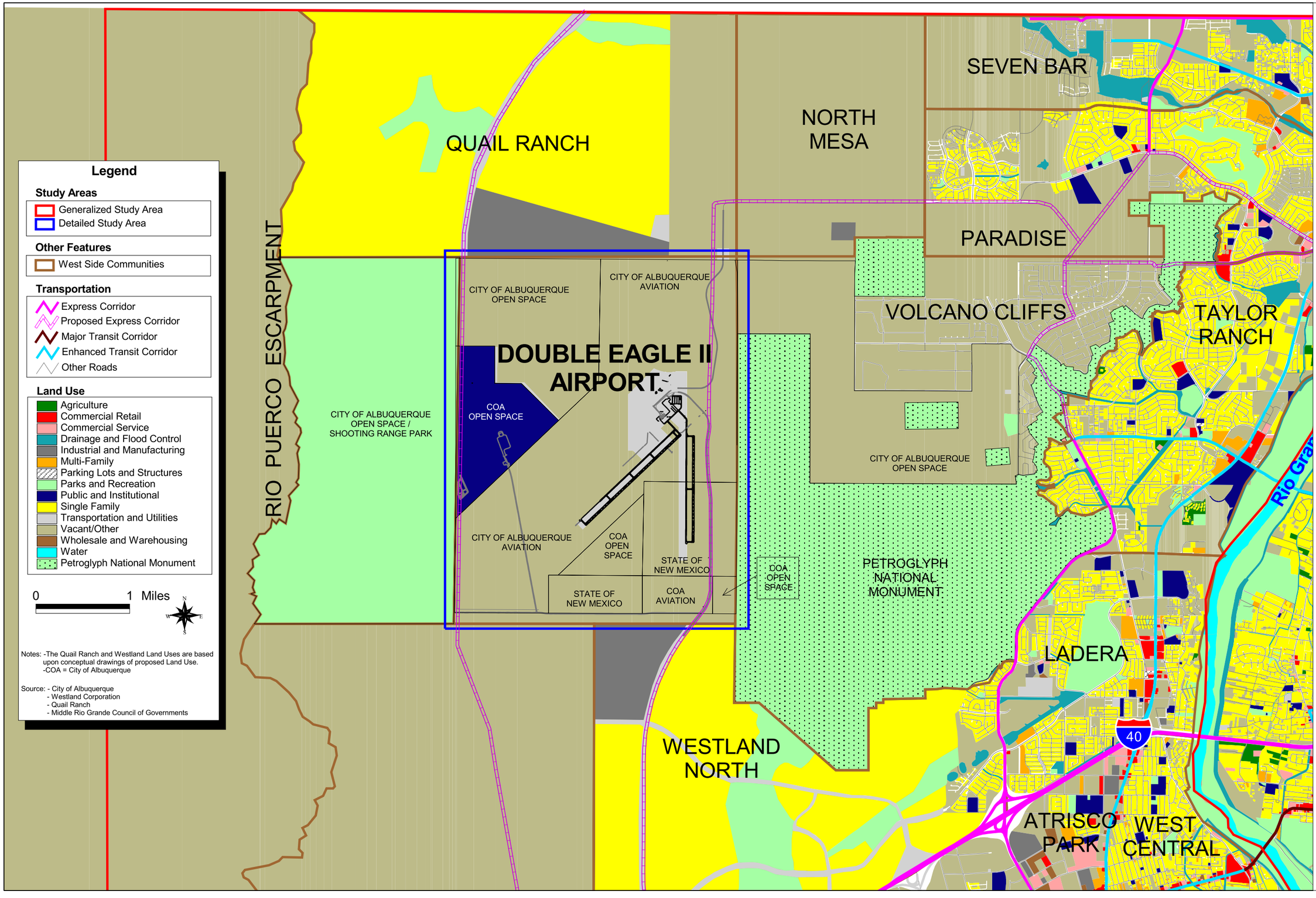


Figure 4.2

Land Use

Double Eagle II Airport Master Plan

TABLE 4.2
DEMOGRAPHIC DATA FOR THE GENERALIZED STUDY AREA
Double Eagle II Airport
Master Plan Study

Census Data Category	Racial Characteristics of the Generalized Study Area
Population	
White	55,561
Black	2,002
American Indian, Eskimo, or Aleut	3,373
Asian or Pacific Islander	649
Other Race*	19,097
Total	**80,682**
Hispanic Origin	45,974
	Age Distribution Within the Generalized Study Area
Age Group	
Less than 5 years	7,667
5 to 9 years	7,918
10 to 14 years	6,891
15 to 19 years	5,654
20 to 24 years	5,463
25 to 29 years	7,821
30 to 34 years	8,476
35 to 39 years	7,460
40 to 44 years	5,958
45 to 54 years	7,087
55 to 64 years	4,983
65 to 74 years	3,355
75 and Over	1,949
	Housing Units Within the Generalized Study Area
Housing Units	29,017
	Income Distribution Within the Generalized Study Area
Household Income	
Under $10,000	3,616
$10,000 to $19,999	5,130
$20,000 to $24,999	2,555
$25,000 to $29,999	2,405
$30,000 to $34,999	2,480
$35,000 to $49,999	5,486
$50,000 to $74,999	3,897
$75,000 to $99,999	721
$100,000 to $149,999	368
$150,000 and Over	117

* "Other Race" - respondents providing write-in entries, such as, multiracial, mixed, interracial, or a Hispanic or Latino group are included in the "Other Race" category (U.S. Census Bureau, 2000).

Source: 1990 U.S. Census Bureau.
URS Corporation, 2001.

Bernalillo County 1998 annual averages of employment by industry (non-agricultural) are shown in Table 4.3. The New Mexico Department of Labor indicates that the "Services and Miscellaneous" classification employed the most persons with an annual average of 102,923, while "Mining" employed the least with an annual average of 74.

TABLE 4.3
BERNALILLO COUNTY EMPLOYMENT BY INDUSTRY
Double Eagle II Airport
Master Plan Study

Industry	Employment
Services and Miscellaneous	102,923
Retail Trade	58,699
Government	56,783
Manufacturing	20,621
Contract Construction	19,329
Finance, Insurance and Real Estate	16,035
Wholesale Trade	16,029
Transportation and Public Utilities	15,184
Mining	74

Source: New Mexico Economic Development Department, 2001.

In 1997, agricultural statistics indicate that there were 468 farms in Bernalillo County. The total land area of farms was 464,801 acres with an average size of 993 acres. The market value of agricultural products sold totaled $31,028,000. Of this total, 82 percent went to livestock while 18 percent went to crop sales. The top five commodities within Bernalillo County were milk, cattle and calves, all hay, chili, and sheep.

According to the Bureau of Business and Economic Research, the per capita income in Bernalillo County has increased from $17,472 in 1990 to $26,434 in 1998. This is an increase of 33 percent over the eight-year period.

The BCDC is located east of the Soil Amendment Facility. BCDC currently houses over 700 inmates. Maximum stay for individual inmates at BCDC is one year. A new BCDC is scheduled to open within the year, and a number of the inmates will be transferred to the new facility located several miles to the southeast.

4.2.3 Section 303(c) Title 49 U.S. Code and U.S. DOI Section 6(f) Resources

4.2.3.1 Section 303(c) Sites

Section 303(c), Title 49 U.S. Code, commonly referred to as Section 4(f), provides protection for special properties, including significant publicly owned parks, recreation areas, wildlife and waterfowl refuges, or any significant historic sites. Protection also applies to all cultural resource sites on, or eligible for, inclusion on the National Register of Historic Places (36 Code of Federal Regulations (CFR), Section 60.4). Section 303(c) prevents the approval of a proposed Federal action that requires the use of these special properties unless no feasible and prudent alternative exists and the project includes all possible planning to minimize harm to the resource resulting from such use.

For the purposes of Section 303(c) properties, a “use” refers to a permanent acquisition or direct taking of the property or a temporary occupancy of the property that is adverse to the statute’s preservationist purposes. Section 303(c) also applies when a “constructive use,” or certain indirect uses, of the resource occurs.

The Petroglyph National Monument and the Shooting Range State Park located within the GSA are identified as Section 303(c) resources. Please refer to Section 4.2.4 for more information on the Petroglyph National Monument.

The Shooting Range Park is located to the west of Double Eagle II Airport. The park is a 3,832-acre park owned by the City of Albuquerque Open Space Division. The Shooting Range Park, established in 1976, is a predominantly undeveloped park open to the public under park-use regulations and is fenced to prevent grazing. A portion of the eastern end of the park contains a shooting range and associated buildings. A trap and skeet area is also located at the park. The remainder of the park is a grassland preserve that remains open and in a natural state.

The Shooting Range Park is a part of the West Side Open Space special use area and is managed by the Outdoor Recreation Division of the City Cultural and Recreational Services Department of the City of Albuquerque. Special use areas are unique facilities that contribute to the inventory of recreation opportunities in the metro area, but are not commonly found in the Open Space Network.

4.2.3.2 Section 6(f) Sites

The Land and Water Conservation Fund (LWCF) Act of 1965, as amended, and 16 U.S. Code, Section 460ℓ-8(f)3, more commonly referred to as Section 6(f), requires that all properties receiving LWCF assistance for planning, acquisition, or development be perpetually maintained for public outdoor recreation use. The act requires, in part, that: “No property acquired or developed with assistance under this section shall, without approval of the Secretary of the Interior, be converted to other than public outdoor recreation uses.” A portion of the Petroglyph National Monument located within the DSA is identified as a Section 6(f) resource. Please refer to Section 4.2.4 for more information on the Petroglyph National Monument.

4.2.4 Historic and Archeological Resources

National Historic Landmarks and National Register eligible or listed historic and archaeological resources which may be affected by Federal actions are given a measure of protection by Federal law, primarily the National Historic Preservation Act of 1966 (NHPA), as amended, and its implementing regulations, 36 CFR 800. These laws and regulations are invoked by the involvement of Federal funding, licensing, or permitting. Additionally, it is necessary to comply with any existing state and local requirements.

Under the authority of Section 106 of NHPA, a Federal agency must, prior to expenditure of funds or issuance of a license or permit for an undertaking, take into account the effect a project may have on a National Historic Landmark and any historic property, that is, a property listed or eligible for listing on the National Register of Historic Places. This effort involves the identification of National Register eligible and listed properties in an area of potential effect (APE). The APE is "the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic

properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking" (36 CFR 800.16(d)). When seeking environmental approval, the Federal agency must consult with the New Mexico State Historic Preservation Officer (SHPO) concerning the National Register eligibility of newly identified properties within the APE. The Double Eagle II Airport Master Plan describes the one historic resource within the DSA, the Petroglyph National Monument. Traditional and cultural properties of the area are also discussed. Additional information will be provided at a later date when an archaeological assessment of the entire existing airport property is performed as part of an Environmental Assessment for a proposed waterline.

4.2.4.1 Petroglyph National Monument

Established in 1990, the 7,200-acre Petroglyph National Monument is the only unit in the National Park System to focus on North America's heritage of prehistoric Indian rock art. Most of the petroglyphs were created between 1300 and 1650 AD; though some could be as much as 2,000 to 3,000 years old while others are historic, dating from the Spanish colonial period.

Looking due west from Albuquerque, volcanoes outline the horizon. Just one mile east of the volcanoes, a serpentine "wall" of black rock stretches north and south for 17 miles; this is the West Mesa basaltic escarpment.

Petroglyphs, images pecked or carved on the basaltic cliffs, are found throughout the 17-mile stretch of the escarpment. The bulk of the petroglyphs consist of Rio Grande Style imagery, some of the most dramatic and complex in the Southwest.

According to the Draft Petroglyph General Management Plan, the Petroglyph National Monument is, “the first national park system area specifically established to protect and interpret rock carvings and their setting and to preserve for the benefit and enjoyment of present and future generations…the nationally significant West Mesa Escarpment, the Las Imagines National Archeological District, a portion of the Atrisco Land Grant, and other significant natural and cultural resources, and to facilitate research activities associated with the resources.” One of the purposes of the monument is to “provide opportunities for diverse groups to understand, appreciate, and experience the monument in ways that are compatible with the monument’s significance.” The area west of the volcanoes is in the mesa top and flats subzone, which is described as “mesa-top lands with their valuable wildlife habitat, opportunities to study volcanic processes, numerous archaeological sites, values to the Pueblo Indians, and vast open views of the volcanoes, the escarpment, the Sandia Mountains, and other landscape features.”

In addition, according to the New Mexico Cultural Resources Information System database, 300 archaeological sites are present within the monument boundaries.

4.2.4.2 Traditional and Cultural Properties

An ethnographic assessment was completed as part of the *Environmental Assessment of Proposed On-Airport Access Road Double Eagle II Airport* in 1992. Drs. Michael J. Evans and Richard W. Stoffle of the University of Arizona, Bureau of Applied Research in Anthropology completed the study. The results of their study are summarized in the following paragraphs.

Double Eagle II Airport is located in an area that has been used for thousands of years by the Pueblo people and their ancestors. In particular, the area east of the airport, within the area of the Petroglyph National Monument, is highly regarded by the Pueblo people for its sacred and ceremonial importance.

Historically, Indian people used the area around the airport for hunting and as a trade route to other Pueblos. According to the report, all the activity was accompanied by the appropriate religious and ceremonial activity, much of which was conducted in the area now encompassed by the Petroglyph National Monument.

Currently, the volcanoes next to the airport serve as a "communication nexus" between this world and the spirit world. Because of the volcano openings, communication is facilitated between the two worlds; an Indian person can expect his or her prayers to be heard in the spirit world if they are said near volcanoes (Evans and Stoffle, 1992). In addition to personal prayer, the Pueblo people use the area around the volcanoes for various ceremonies and prayers.

4.2.5 Airport Noise

4.2.5.1 Project Description

Double Eagle II Airport is located in a largely undeveloped area on the outskirts of the City of Albuquerque. Therefore, background noise levels (such as vehicle traffic, construction, etc.) are very low in comparison to the more developed urban areas closer to the city center. Noise from aircraft using Double Eagle II Airport may be perceived as obtrusive due to the low background noise levels of the immediate surrounding area.

The purpose of this analysis is to evaluate the existing noise exposure at Double Eagle II Airport. The project analysis was comprised of four parts: 1) collection of existing operational data, 2) development of noise exposure contours for the existing condition, 3) analysis of the existing noise impacts, and 4) documentation of the noise environment in accordance with FAA requirements.

4.2.5.2 Development of Operations Input

This section contains a description of the process used to prepare the operations data that constitute the input for the 2001 Existing Condition noise exposure contours and is a basis for all future contours.

Integrated Noise Model – The analysis for the existing condition noise contours was conducted using the FAA Integrated Noise Model (INM) Version 6.0c. INM was designed to estimate long-term average effects using average annual input conditions, with the day-night average sound level (DNL) metric. DNL represents average aircraft noise levels that would occur over a 24-hour period with a 10-decibel (dBA) penalty added to aircraft operations between the hours of 10:00 p.m. and 7:00 a.m. Noise contours were generated at DNL 65, 70, and 75 dBA, which is consistent with FAA guidelines.

The INM Version 6.0c has enhancements that enable it to produce more accurate noise predictions than previous versions. Such enhancements include consideration of airfield elevation and average temperature upon noise propagation and aircraft performance. These features were utilized in this analysis.

Contour Preparation Process – The standard approach for preparation of airport noise exposure contours requires compilation of several categories of information about the operation of an airport:

- Airport Layout: Location, length and orientation of all runways;
- Aircraft Operations: Numbers of departures, arrivals, and pattern operations by each type of aircraft during an "annual average day." The average daily operations are based on the estimated total operations for the 12-month period between 1 January 2001 and 31 December 2001. The annual average day operations are assigned to either the daytime or nighttime;
- Runway Use: Percentage of operations by each type of aircraft that occur on each runway;
- Flight Tracks: Paths followed by aircraft departing from, or arriving to, each runway;
- Flight Track Usage: Percentage of operations by each aircraft type that use each flight track; and
- Aircraft Flight Profiles: Speed, thrust, and altitude vs. distance along a flight track by each aircraft type.

Description of Data Input – This section contains the information used to prepare the noise contours. General data sources of information included airport personnel, FAA Form 5010 Airport Master Records, and the New Mexico State Highway and Transportation Department (NMSHTD), Aviation Division. The Fixed Base Operators (FBO) at Double Eagle II Airport provided more detailed information.

Airport Layout – Double Eagle II Airport currently has two paved operational runways: Runways 4/22 and 17/35. Runway 4/22 is 7,400 feet long and 100 feet wide, while Runway 17/35 is 6,000 feet long and 100 feet wide. The airport elevation is 5,837 feet above mean sea level (msl).

Aircraft Operations – Although a variety of aircraft operate at the airport, they are limited to only a few general types of aircraft that have similar operational characteristics and noise emissions. The INM has a database of noise and performance information for over 200 aircraft types. Aircraft operational categories were developed to consolidate the selected aircraft types into groups with similar operational characteristics at Double Eagle II Airport. In addition, the approximate time of operation was estimated in order to calculate DNL. Operations were split into day (7:00 a.m. to 10:00 p.m.) and night (10:00 p.m. to 7:00 a.m.). Table 4.4 shows the estimated annual average day operations by general aircraft type.

Runway Use – Runway use affects the noise impact of aircraft operations since it determines the direction of flights (arrival or departure) near ground level. The existing runways at Double Eagle II Airport allow for four directional possibilities for arriving and departing aircraft. Generally, the primary influence on runway utilization is wind direction, due to the fact that pilots prefer to land and depart with a headwind or as little crosswind as possible. Table 4.5 shows the estimated runway utilization at Double Eagle II Airport. The fixed-wing aircraft (and the military UH-60 helicopter) utilize the runways at Double Eagle II Airport. The civilian helicopters operate to and from the helicopter pad.

TABLE 4.4
ANNUAL AVERAGE DAY OPERATIONS BY AIRCRAFT TYPE
Double Eagle II Airport
Master Plan Study

	Single-Engine Piston[1]		Multi-Engine Piston[2]		Light Helicopter[3]		Medium Helicopter[4]		Business Jet[5]		Military				Grand Total		
											C-130		Helicopter[6]				
	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Total
Departures	15.3415	2.2898	5.3798	0.8454	8.3047	1.2409	0.4832	0.0149	0.4973	0.0783	1.3576	0.2137	0.4436	0.0698	31.8077	4.7528	36.5605
Arrivals	15.3415	2.2898	5.3798	0.8454	8.3047	1.2409	0.4832	0.0149	0.4793	0.0783	1.3576	0.2137	0.4436	0.0698	31.8077	4.7528	36.5605
Touch and Go[7]	193.7152	---	64.4044	---	---	---	---	---	---	---	---	---	---	---	258.1196	---	258.1196
Total	224.3982	4.5796	75.1640	1.6908	16.6094	2.4818	0.9664	0.0298	0.9946	0.1566	2.7152	0.4274	0.8872	0.1396	321.7350	9.5056	331.2406

[1] Modeled as: GASEPV (General Aviation, Single-Engine, Pitch Variable).
[2] Modeled as: BEC58P.
[3] Modeled as: Bell 206L.
[4] Modeled as: Bell 222.
[5] Modeled as: Lear 35.
[6] Modeled as: S70 (UH-60A).
[7] Touch and Go counted as two operations.

Day = 7:00 a.m. to 10:00 p.m.
Night = 10:00 p.m. to 7:00 a.m.

Source: URS Corporation, 2001.
Double Eagle II Airport, 2001.

TABLE 4.5
RUNWAY UTILIZATION
Double Eagle II Airport
Master Plan Study

Runway	Percent Utilization
4	20%
17	25%
22	40%
35	15%
Total	**100%**

Source: URS Corporation, 2001; Double Eagle II Airport, 2001.

Flight Tracks – Flight tracks are graphic representations of the paths that aircraft fly in relation to the ground. Pilots typically align their aircraft with the runway when operating in and out of the airport. Flight tracks do not represent the precise paths flown by all aircraft using Double Eagle II Airport, but the primary flight corridors traveled by the majority of the aircraft flying in and out of the airport. As an input to the INM, aircraft operations are assigned to flight tracks in percentages obtained from pilots, airport operators, and/or air traffic control personnel (not applicable to Double Eagle II Airport).

Fixed-wing aircraft flight tracks were modeled in the INM using dispersion, which accounts for pilot deviation from an average flight path. The greatest deviation was estimated to one statute mile from each side of the average flight path.

Arrival flight tracks to Double Eagle II Airport are shown on Figure 4.3. Fixed-wing aircraft arrival tracks from the west are from the Gallup VOR (V-60 and V-291 airways) and Farmington VOR (V-68 and V-187 airways). Tracks from the east arrive primarily from Santa Fe, north of Sandia Peak, over the City of Albuquerque, or south of the city through a pass in the Sandia Mountains. The area directly south of Double Eagle II Airport is typically avoided due to conflicts with arriving aircraft to Albuquerque International Sunport. The area directly north of Double Eagle II Airport is considered a general practice area, which aircraft transition from via the northeast and northwest arrival tracks shown on Figure 4.3. Civilian helicopter arrival flight tracks to and from the helicopter pad are also shown on Figure 4.3.

Departure tracks, shown on Figure 4.4, are identical to the arrival tracks. Five general routes were modeled – two to the west (Gallup and Farmington VORs) and three to the east. In addition, the area to the south is generally avoided because of conflict with Albuquerque International Sunport arrivals.

Touch and go flight tracks are shown on Figure 4.5. Runways 4 and 17 utilize left-hand traffic patterns. Runways 22 and 35 utilize right-hand traffic patterns.

Flight Track Utilization – Estimated flight track use was based on interviews with Double Eagle II Airport/FBO personnel familiar with the average aircraft operations at Double Eagle II Airport. Table 4.6 shows the fixed-wing aircraft flight track utilization for arrivals and departures for all aircraft types using Double Eagle II Airport (only one touch and go track is associated with each runway; therefore, utilization for each is 100 percent). The arrival flight track utilizations are also shown on Figure 4.3, and the departure flight track utilizations are shown on Figure 4.4. Table 4.7 shows the number of average annual day flight operations, by flight track, for all aircraft types using Double Eagle II Airport.

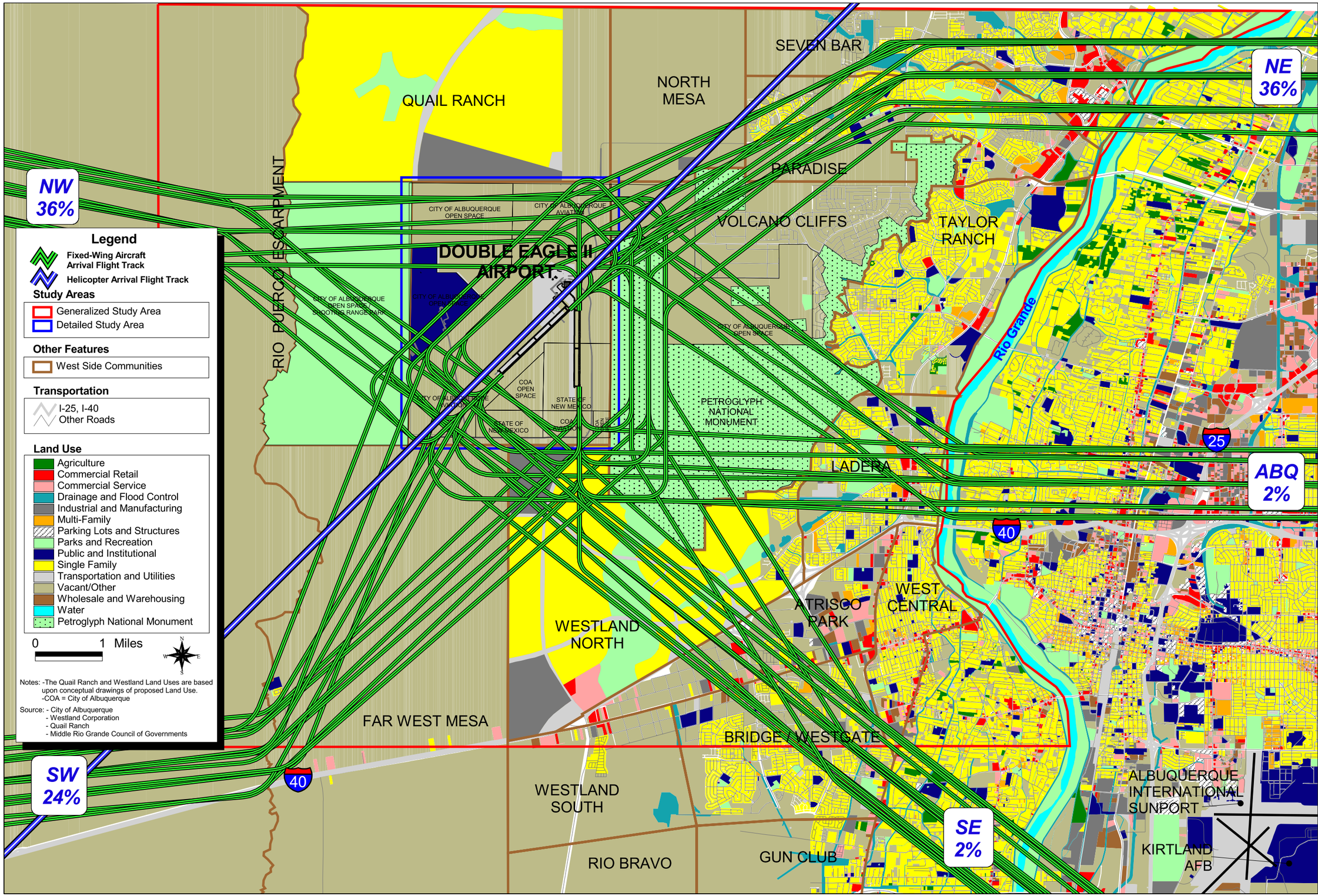


Figure 4.3

Arrival Flight Tracks

Double Eagle II Airport Master Plan

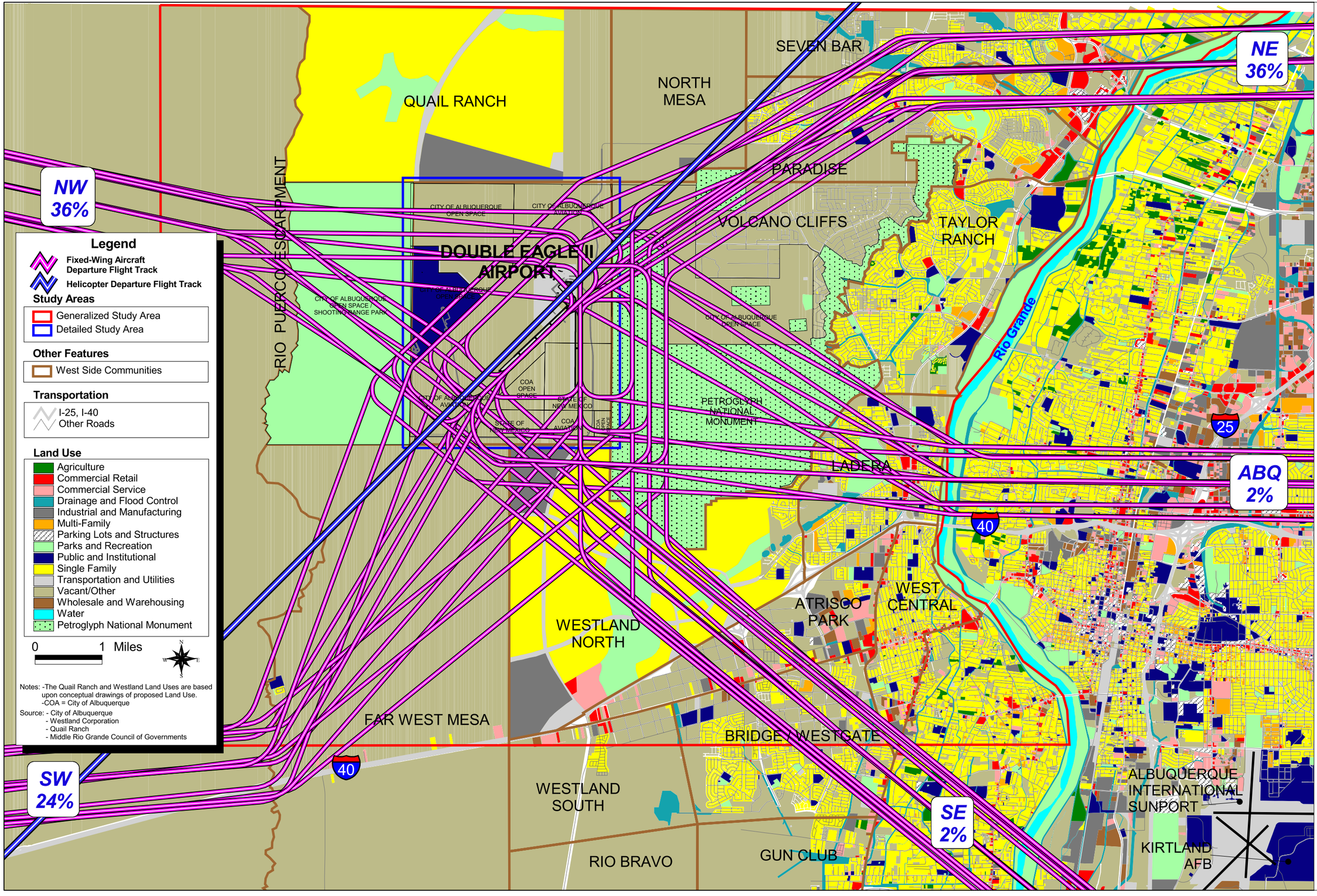


Figure 4.4

Departure Flight Tracks

Double Eagle II Airport Master Plan

Figure 4.5

Touch and Go Flight Tracks

Double Eagle II Airport Master Plan

Legend

Touch and Go Flight Track

Study Areas
- Generalized Study Area
- Detailed Study Area

Other Features
- West Side Communities

Transportation
- I-25, I-40
- Other Roads

Landuse
- Agriculture
- Commercial Retail
- Commercial Service
- Drainage and Flood Control
- Industrial and Manufacturing
- Multi-Family
- Parking Lots and Structures
- Parks and Recreation
- Public and Institutional
- Single Family
- Transportation and Utilities
- Vacant/Other
- Wholesale and Warehousing
- Water
- Petroglyph National Monument

0 1 Miles

Source: Bernalillo County
Note: COA = City of Albuquerque

DOUBLE EAGLE II AIRPORT

04T1
22T1

17T1
35T1

COA OPEN SPACE
COA AVIATION
COA OPEN SPACE / SHOOTING RANGE PARK
STATE OF NEW MEXICO
COA OPEN SPACE

QUAIL RANCH
NORTH MESA
SEVEN BAR
PARADISE
VOLCANO CLIFFS
TAYLOR RANCH
RIO PUERCO ESCARPMENT
PETROGLYPH NATIONAL MONUMENT
Rio Grande
LADERA
WEST CENTRAL
ATRISCO PARK
WESTLAND NORTH
FAR WEST MESA
BRIDGE / WESTGATE
WESTLAND SOUTH
RIO BRAVO
GUN CLUB
ALBUQUERQUE INTERNATIONAL SUNPORT
KIRTLAND AFB

25
40
40

TABLE 4.6
FIXED-WING AIRCRAFT FLIGHT TRACK UTILIZATION
Double Eagle II Airport
Master Plan Study

Operation Type	Track ID	Track Utilization
Departure	ABQ	2%
	NE	36%
	NW	36%
	SW	24%
	SE	2%
Arrival	ABQ	2%
	NE	36%
	NW	36%
	SW	24%
	SE	2%
Touch and Go	04T1	100%
	17T1	100%
	22T1	100%
	35T1	100%

Source: URS Corporation, 2001.
Double Eagle II Airport, 2001.

TABLE 4.7
MODELED ANNUAL AVERAGE DAY OPERATIONS BY AIRCRAFT TYPE
Double Eagle II Airport
Master Plan Study

Operation Type	Runway	Track ID	Single-Engine Piston[1]		Multi Engine Piston[2]		Light Helicopter[3]		Medium Helicopter[4]		Business Jet[5]		C-130		Military Helicopter[6]		Grand Total		
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Total
Departure	4	ABQ	0.0614	0.0092	0.0215	0.0034	-	-	-	-	0.0020	0.0003	0.0054	0.0009	0.0018	0.0003	0.0921	0.0140	0.1061
		NE	1.1046	0.1649	0.3873	0.0609	-	-	-	-	0.0358	0.0056	0.0977	0.0154	0.0319	0.0050	1.6574	0.2518	1.9092
		NW	1.1046	0.1649	0.3873	0.0609	-	-	-	-	0.0358	0.0056	0.0977	0.0154	0.0319	0.0050	1.6574	0.2518	1.9092
		SW	0.7364	0.1099	0.2582	0.0406	-	-	-	-	0.0239	0.0038	0.0652	0.0103	0.0213	0.0034	1.1050	0.1679	1.2728
		SE	0.0614	0.0092	0.0215	0.0034	-	-	-	-	0.0020	0.0003	0.0054	0.0009	0.0018	0.0003	0.0921	0.0140	0.1061
	17	ABQ	0.0767	0.0114	0.0269	0.0042	-	-	-	-	0.0025	0.0004	0.0068	0.0011	0.0022	0.0003	0.1151	0.0175	0.1326
		NE	1.3807	0.2061	0.4842	0.0761	-	-	-	-	0.0448	0.0070	0.1222	0.0192	0.0399	0.0063	2.0718	0.3147	2.3865
		NW	1.3807	0.2061	0.4842	0.0761	-	-	-	-	0.0448	0.0070	0.1222	0.0192	0.0399	0.0063	2.0718	0.3147	2.3865
		SW	0.9205	0.1374	0.3228	0.0507	-	-	-	-	0.0298	0.0047	0.0815	0.0128	0.0266	0.0042	1.3812	0.2098	1.5910
		SE	0.0767	0.0114	0.0269	0.0042	-	-	-	-	0.0025	0.0004	0.0068	0.0011	0.0022	0.0003	0.1151	0.0175	0.1326
	22	ABQ	0.1227	0.0183	0.0430	0.0068	-	-	-	-	0.0040	0.0006	0.0109	0.0017	0.0035	0.0006	0.1842	0.0280	0.2121
		NE	2.2092	0.3297	0.7747	0.1217	-	-	-	-	0.0716	0.0113	0.1955	0.0308	0.0639	0.0101	3.3149	0.5036	3.8184
		NW	2.2092	0.3297	0.7747	0.1217	-	-	-	-	0.0716	0.0113	0.1955	0.0308	0.0639	0.0101	3.3149	0.5036	3.8184
		SW	1.4728	0.2198	0.5165	0.0812	-	-	-	-	0.0477	0.0075	0.1303	0.0205	0.0426	0.0067	2.2099	0.3357	2.5456
		SE	0.1227	0.0183	0.0430	0.0068	-	-	-	-	0.0040	0.0006	0.0109	0.0017	0.0035	0.0006	0.1842	0.0280	0.2121
	35	ABQ	0.0460	0.0069	0.0161	0.0025	-	-	-	-	0.0015	0.0002	0.0041	0.0006	0.0013	0.0002	0.0691	0.0105	0.0796
		NE	0.8284	0.1236	0.2905	0.0457	-	-	-	-	0.0269	0.0042	0.0733	0.0115	0.0240	0.0038	1.2431	0.1888	1.4319
		NW	0.8284	0.1236	0.2905	0.0457	-	-	-	-	0.0269	0.0042	0.0733	0.0115	0.0240	0.0038	1.2431	0.1888	1.4319
		SW	0.5523	0.0824	0.1937	0.0304	-	-	-	-	0.0179	0.0028	0.0489	0.0077	0.0160	0.0025	0.8287	0.1259	0.9546
		SE	0.0460	0.0069	0.0161	0.0025	-	-	-	-	0.0015	0.0002	0.0041	0.0006	0.0013	0.0002	0.0691	0.0105	0.0796
	Helicopter Pad	HNE	-	-	-	-	4.1524	0.6205	0.2416	0.0075	-	-	-	-	-	-	4.3940	0.6279	5.0219
		HSW	-	-	-	-	4.1524	0.6205	0.2416	0.0075	-	-	-	-	-	-	4.3940	0.6279	5.0219
Arrival	4	ABQ	0.0614	0.0092	0.0215	0.0034	-	-	-	-	0.0020	0.0003	0.0054	0.0009	0.0018	0.0003	0.0921	0.0140	0.1061
		NE	1.1046	0.1649	0.3873	0.0609	-	-	-	-	0.0358	0.0056	0.0977	0.0154	0.0319	0.0050	1.6574	0.2518	1.9092
		NW	1.1046	0.1649	0.3873	0.0609	-	-	-	-	0.0358	0.0056	0.0977	0.0154	0.0319	0.0050	1.6574	0.2518	1.9092
		SW	0.7364	0.1099	0.2582	0.0406	-	-	-	-	0.0239	0.0038	0.0652	0.0103	0.0213	0.0034	1.1050	0.1679	1.2728
		SE	0.0614	0.0092	0.0215	0.0034	-	-	-	-	0.0020	0.0003	0.0054	0.0009	0.0018	0.0003	0.0921	0.0140	0.1061
	17	ABQ	0.0767	0.0114	0.0269	0.0042	-	-	-	-	0.0448	0.0004	0.0068	0.0011	0.0022	0.0003	0.1151	0.0175	0.1326
		NE	1.3807	0.2061	0.4842	0.0761	-	-	-	-	0.0448	0.0070	0.1222	0.0192	0.0399	0.0063	2.0718	0.3147	2.3865
		NW	1.3807	0.2061	0.4842	0.0761	-	-	-	-	0.0298	0.0070	0.1222	0.0192	0.0399	0.0063	2.0718	0.3147	2.3865
		SW	0.9205	0.1374	0.3228	0.0507	-	-	-	-	0.0025	0.0047	0.0815	0.0128	0.0266	0.0042	1.3812	0.2098	1.5910
		SE	0.0767	0.0114	0.0269	0.0042	-	-	-	-	0.0040	0.0004	0.0068	0.0011	0.0022	0.0003	0.1151	0.0175	0.1326

TABLE 4.7 (CONTINUED)
MODELED ANNUAL AVERAGE DAY OPERATIONS BY AIRCRAFT TYPE
Double Eagle II Airport
Master Plan Study

Operation Type	Runway	Track ID	Single-Engine Piston[1]		Multi Engine Piston[2]		Light Helicopter[3]		Medium Helicopter[4]		Business Jet[5]		C-130		Military Helicopter[6]		Grand Total		
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Total
Arrival (Cont'd)	22	ABQ	0.1227	0.0183	0.0430	0.0068	-	-	-	-	0.0716	0.0006	0.0109	0.0017	0.0035	0.0006	0.1842	0.0280	0.2121
		NE	2.2092	0.3297	0.7747	0.1217	-	-	-	-	0.0716	0.0113	0.1955	0.0308	0.0639	0.0101	3.3149	0.5036	3.8184
		NW	2.2092	0.3297	0.7747	0.1217	-	-	-	-	0.0477	0.0113	0.1955	0.0308	0.0639	0.0101	3.3149	0.5036	3.8184
		SW	1.4728	0.2198	0.5165	0.0812	-	-	-	-	0.0040	0.0075	0.1303	0.0205	0.0426	0.0067	2.2099	0.3357	2.5456
		SE	0.1227	0.0183	0.0430	0.0068	-	-	-	-	0.0015	0.0006	0.0109	0.0017	0.0035	0.0006	0.1842	0.0280	0.2121
	35	ABQ	0.0460	0.0069	0.0161	0.0025	-	-	-	-	0.0269	0.0002	0.0041	0.0006	0.0013	0.0002	0.0691	0.0105	0.0796
		NE	0.8284	0.1236	0.2905	0.0457	-	-	-	-	0.0179	0.0042	0.0733	0.0115	0.0240	0.0038	1.2431	0.1888	1.4319
		NW	0.8284	0.1236	0.2905	0.0457	-	-	-	-	0.0015	0.0042	0.0733	0.0115	0.0240	0.0038	1.2431	0.1888	1.4319
		SW	0.5523	0.0824	0.1937	0.0304	-	-	-	-	-	0.0028	0.0489	0.0077	0.0160	0.0025	0.8287	0.1259	0.9546
		SE	0.0460	0.0069	0.0161	0.0025	-	-	-	-	-	0.0002	0.0041	0.0006	0.0013	0.0002	0.0691	0.0105	0.0796
	Helicopter Pad	HNE	-	-	-	-	4.1524	0.6205	0.2416	0.0075	-	-	-	-	-	-	4.3940	0.6279	5.0219
		HSW	-	-	-	-	4.1524	0.6205	0.2416	0.0075	-	-	-	-	-	-	4.3940	0.6279	5.0219
Touch and Go[7]	4	04T1	38.7430	-	12.8809	-	-	-	-	-	-	-	-	-	-	-	51.6239	-	51.6239
	17	17T1	48.4288	-	16.1011	-	-	-	-	-	-	-	-	-	-	-	64.5299	-	64.5299
	22	22T1	77.4861	-	25.7618	-	-	-	-	-	-	-	-	-	-	-	103.2478	-	103.2478
	35	35T1	29.0573	-	9.6607	-	-	-	-	-	-	-	-	-	-	-	38.7179	-	38.7179
TOTAL			224.3982	4.5796	75.1640	1.6908	16.6094	2.4818	0.9664	0.0298	0.9946	0.1566	2.7152	0.4274	0.8872	0.1396	321.7350	9.5056	331.2406

[1] Modeled as: GASEPV (General Aviation, Single-Engine, Pitch Variable).
[2] Modeled as: BEC58P.
[3] Modeled as: Bell 206L.
[4] Modeled as: Bell 222.
[5] Modeled as: Lear 35.
[6] Modeled as: S70 (UH-60A).
[7] Touch and Go counted as two operations.

Day = 7:00 a.m. to 10:00 p.m.
Night = 10:00 p.m. to 7:00 a.m.

Source: URS Corporation, 2001.
Double Eagle II Airport, 2001.

Helicopter flight track utilization is not shown. Helicopter operations were modeled in an even percentage for arrivals/departures to or from the northeast and southwest of the helicopter pad.

Aircraft Flight Profiles – Double Eagle II Airport is located at a high elevation and, consequently, aircraft operating at Double Eagle II Airport perform less efficiently than aircraft operating at lower elevations. More specifically, aircraft operating at Double Eagle II Airport have longer takeoff roll distances and lower climbing capability than aircraft flying at airports at lower elevations. Standard INM departure profiles were used to model the aircraft operations since the procedure steps used in the INM take into account airfield elevation and atmospheric conditions. The profile generator uses the methodology of Society of Automotive Engineers (SAE) AIR-1845 to construct the takeoff, climb, and arrival segments.

4.2.5.3 Existing (2001) Aircraft Noise Exposure

Noise contours were generated with the INM for the 2001 existing condition. The estimated DNL 65 dBA noise contour for the existing condition is shown on Figure 4.6. As shown, the entire noise contour is contained within the airport boundary. The area of the contour is estimated to be 0.798 square miles. As a result, there are no noise-sensitive uses within the DNL 65 dBA noise contour and no land use incompatibility results from the current operation of the airport. Although the analysis indicated that there are currently no noise impacts because of the operation of the airport, the analysis considers the average person's response to noise. It is possible that some individuals in nearby communities who may be particularly sensitive to noise will consider themselves impacted from the existing conditions nonetheless.

4.2.6 Solid Waste

In 2000, Double Eagle II Airport generated 20 tons of Municipal Solid Waste (MSW) per year. Solid waste from Double Eagle II Airport is collected by the City of Albuquerque and sent to Cerro Colorado Landfill in Bernalillo County. This facility has been in existence for 11 years and accommodates approximately 450,000 tons of MSW per year. The landfill has a projected capacity of 15 years. A proposed expansion of the landfill will extend the life of the landfill 45 years. The Cerro Colorado Landfill is the closest landfill to Double Eagle II Airport and is located approximately 14 miles southwest of the Double Eagle II Airport.

According to FAA AC 150/5200-33, *Hazardous Wildlife Attractants On or Near Airports*, waste disposal sites that have the potential to attract birds are considered incompatible if located within 10,000 feet (1.9 statute miles) of any runway end used or planned to be used by turbine-powered aircraft or located within a 5-mile radius of a runway that attracts or sustains hazardous bird movements into or across the runways and/or approach and departure patterns of aircraft. The potential of runway facilities to be operated adjacent to active landfills where a bird-strike hazard may be present and the airport's ability to comply with FAA guidance were evaluated for the existing conditions at Double Eagle II Airport.

According to Mr. Michael Medley, Double Eagle II Airport Manager, there have been no bird problems due to the location of the solid waste dumpsters on airport property.

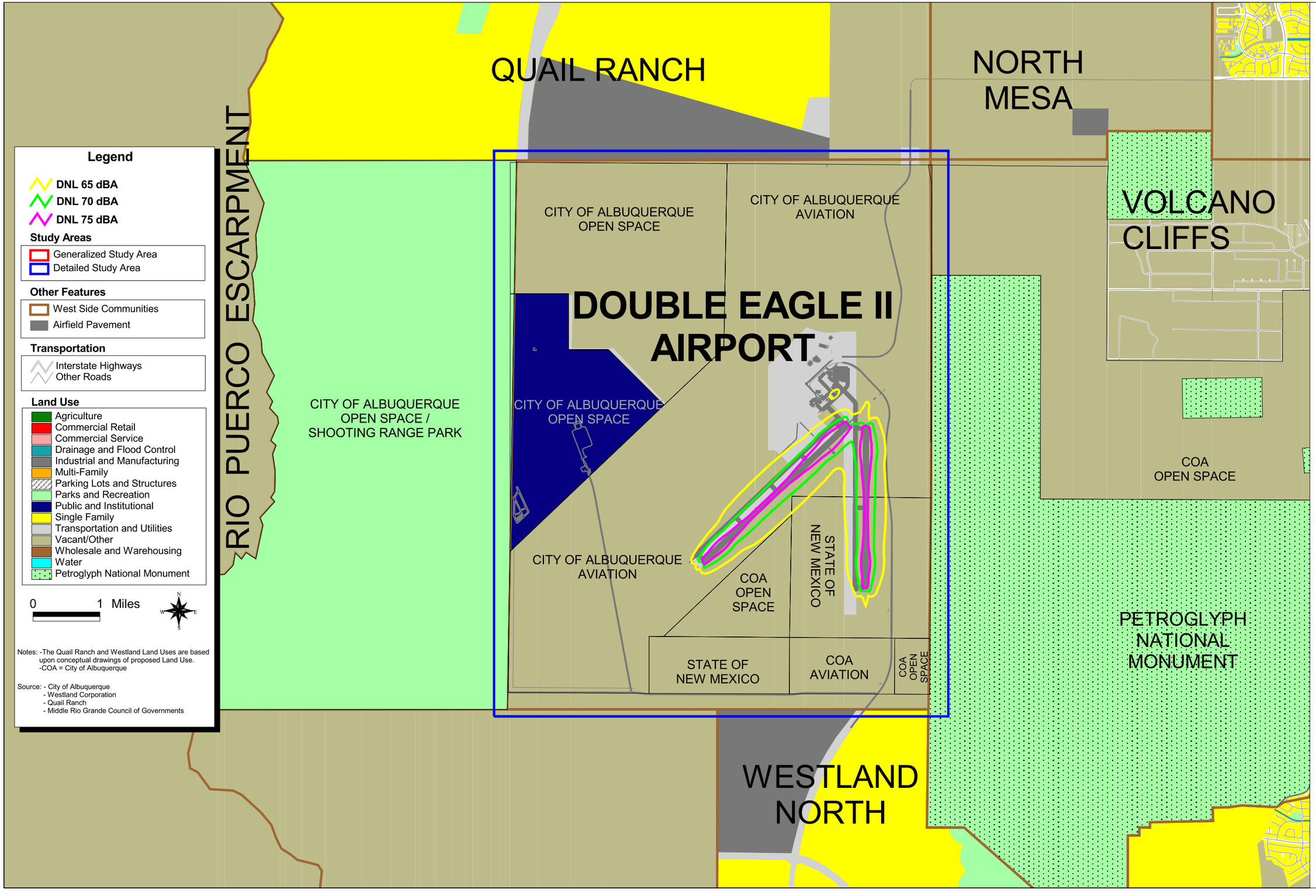


Figure 4.6

Existing (2001) DNL Noise Contours

Double Eagle II Airport Master Plan

4.2.7 Light Emissions

Various types of lighting that can impact light sensitive areas in the vicinity of an airport illuminate airport facilities. These lights can emanate from any on the following:

- Airfield Lighting;
- Apron Lighting; and
- Visual Navigational Aids.

Runway 4/22 is equipped with MIRL system, a PAPI system on Runway 4 end, and a MALSR system on the Runway 22 end. Runway 17/35 is equipped with MIRL and REIL systems and a PAPI on the Runway 17 end.

The REIL system is used to provide rapid and positive identification of the approach end of the runway threshold. These lights consist of two synchronized white flashing lights located 40 feet from the runway approach ends.

Runway Threshold Lights are a series of lights located at the end of each runway and perpendicular to the approach end of a runway threshold. These lights indicate the start (green filter) and end (red filter) of the runway threshold.

A MIRL system consists of a configuration of lights that define the lateral and longitudinal limits of the usable landing area. These lights emit white (clear) light. Yellow lights are substituted for white light on the last 2,000 feet of the runway. MIRLs have a maximum height of 24 inches above pavement elevation. The maximum required spacing is 200 feet between each light unit, and are located no more than 10 feet from the runway edge. MIRLs are used on runways having non-precision instrument approach procedures.

A MALSR is a uni-directional, medium intensity white approach light system, angled slightly upward along the approach path of the runway.

The PAPI system is a uni-directional, high intensity, two-color light system producing a bicolor split beam: white above and red below.

The area surrounding Double Eagle II Airport is undeveloped. East of the airport is the undeveloped Petroglyph National Monument. Residential areas are primarily located north of the airport none are located adjacent to the airport property. Therefore, there are no existing light emission impacts from Double Eagle II Airport.

4.3 PHYSICAL ENVIRONMENT

4.3.1 Geographic Overview

The City of Albuquerque is located in the central portion of the state of New Mexico. Broad, semi-arid plains interrupted occasionally by hills and mountain ranges characterize the region. The Rio Grande River flows through the center of Bernalillo County, which is in the central part of New Mexico. The land

rises on both sides of the river and forms mesas that have elevations of approximately 5,000 feet. To the east, the mesa is narrow and is just beyond the Sandia and Manzano Mountains. Tijeras Canyon separates these two ranges. Sandia Crest peaks at 10,678 feet, and forested mountain slopes decrease in elevation eastward in the central highlands. The elevation at Double Eagle II Airport is 5,834 feet msl.

4.3.2 Climate

Bernalillo County climatic variations are due to the large differences in elevation. The Albuquerque area generally experiences cold winters and hot summers. The mean maximum temperature occurs in July at 91.7° F, and the mean minimum temperature occurs in January at 23.1° F. Average winter (December, January, and February) temperature is 37° F, and the average summer (June, July, and August) temperature is 77° F. Temperatures of 90° F or higher occur an average of 66 days per year (Western Region Climate Center, 2001).

The average yearly rainfall is approximately 8.71 inches per year. August experiences the largest average total precipitation with 1.50 inches and January experiences the lowest average total precipitation with 0.37 inches. During the winter, this area experiences sunshine approximately 71 percent of the time and 78 percent of the time in the summer months. The prevailing winds in the Albuquerque area are from the northwest and southeast (Western Region Climate Center, 2001).

4.3.3 Water Resources

Double Eagle II Airport and its tenants currently use approximately 1.5 million gallons of water per year. Non-potable water is drawn from a dedicated well located approximately 500 feet of the main hangar buildings. The well is extended approximately 1,500 feet below ground level (bgl) and the unconfined water table occurs at approximately 530 feet bgl. A storage tank is located adjacent to the wellhead. Well water on the mesa is considered undrinkable due to high levels of naturally occurring arsenic. Bottled water is used for potable water at the airport.

Sources of potential groundwater contamination at the airport include spills or leaks of chemicals used for airport operations. These chemicals include aviation gas, jet fuel, fire retardant, and other miscellaneous chemicals used in the hangars. All fuel tanks are either contained in vaults, or employ leak detection systems. Sewage generated at the airport is treated by a septic tank system.

Currently, stormwater drainage flows into on-airport ditches and culverts, which feed into a system of off airport arroyos. Under separate contract, Molzen-Corbin and Associates is performing a Stormwater Drainage Master Plan for Double Eagle II Airport. Information from the Stormwater Drainage Master Plan may be available to include in the final version of this Master Plan study.

There are no surface water resources within the DSA.

4.3.4 Floodplains

Floodplain information used for this Master Plan was obtained from the City of Albuquerque Geographic Information System (GIS) data set. Several designated floodplain areas are found within the existing GSA. These areas are associated with small normally dry arroyos, which are designated as special flood hazard areas inundated by the 100-year flood (Zone A) in which no base floodplain elevations have been

determined. Flows in these drainage areas are associated with runoff during and immediately after precipitation. Federal Emergency Management Agency Flood Insurance Rate Maps (FIRMs) covering the DSA were reviewed and confirmed the accuracy of the GIS dataset. Maps specifically addressing the DSA included numbers 92, 94, 100, 307, and 325 of the 35001C0 series dated September 1996. No perennial streams occur within the area. Figure 4.7 illustrates floodplain locations in the airport vicinity.

4.3.5 Soils/Farmlands

Review of the U.S. Department of Agriculture Natural Resources Conservation Service's (NRCS) list of prime or unique farmlands and farmland of statewide importance based on soil classifications was conducted. These soil classifications were evaluated to determine where prime or unique farmlands and farmland of statewide importance were located within the DSA. The location of these farmland soils were then compared to the zoning of the study area to determine if the farmland soil had been previously committed to urban development.

Prime farmland soils produce the highest yields with minimal inputs of energy and economic resources. Statewide important soil does not quite meet the requirements for prime farmland. This could be due to steepness of slope, permeability, susceptibility to erosion, low available water capacity, or some other soil property. Unique farmland soils have a special set of properties that produce certain high value crops.

The Farmland Protection Policy Act (FPPA) states that land is not considered prime farmland if it is already in urban development or has been committed to urban development. As defined in the FPPA (7 CFR Section 658.2):

> "Prime farmland that a state or local government has designated, through zoning or planning, for commercial, industrial or residential use that is not intended at the same time to protect farmland, this land will not be covered by the Act, since it will be deemed to be "committed to urban development" and thus outside the Act's definition of "prime farmland" subject to the Act."

The NRCS has mapped the soil types found in Bernalillo County. Within the DSA, there are no areas of prime or unique farmland or areas of farmland of state importance.

4.3.6 Air Quality

This section describes the existing status of air quality in the GSA and the air emissions sources associated with an airport such as Double Eagle II Airport. Furthermore, the agencies responsible for air quality management and the regulations they enforce are described below.

Both the United States and the State of New Mexico have agencies responsible for the management of ambient air quality in Albuquerque, the U.S. Environmental Protection Agency (EPA), and the New Mexico Environment Department (NMED) Air Quality Bureau (AQB), respectively. Correspondingly, there are National Ambient Air Quality Standards (NAAQS) and New Mexico Ambient Air Quality Standards (NMAAQS) that have been established to protect human health and welfare. These standards, shown in Table 4.8 and described below, are set for "criteria pollutants," which are so named because the EPA sets their respective standards on health-based criteria.

TABLE 4.8
NATIONAL AND STATE AMBIENT AIR QUALITY STANDARDS
Double Eagle II Airport
Master Plan Study

Pollutant	Averaging Time	NAAQS	NAAQS Type	NMAAQS
Carbon Monoxide (CO)	1 hour	35 ppm	Primary	13.1 ppm
	8 hours	9 ppm	Primary	8.7 ppm
Lead (Pb)	1 quarter	1.5 $\mu g/m^3$	Primary & Secondary	---
Nitrogen Dioxide (NO_2)	24 hours	---	---	0.10 ppm
	1 year	0.053 ppm	Primary & Secondary	0.05 ppm
Ozone (O_3)	1 hour	0.120 ppm	Primary & Secondary	---
	8 hours	0.08 ppm	Primary & Secondary	---
Particulate Matter with a diameter < 10 μm (PM_{10})	24 hours	150 $\mu g/m^3$	Primary & Secondary	---
	1 year	50 $\mu g/m^3$	Primary & Secondary	---
Particulate Matter with a diameter < 2.5 μm ($PM_{2.5}$)	24 hours	65 $\mu g/m^3$	Primary & Secondary	---
	1 year	15 $\mu g/m^3$	Primary & Secondary	---
Sulfur Dioxide (SO_2)	3 hours	0.50 ppm	Secondary	---
	24 hours	0.14 ppm	Primary	0.10 ppm
	1 year	0.03 ppm	Primary	0.02 ppm
Total Suspended Particulates (TSP)	24 hours	---	---	150 $\mu g/m^3$
	1 year	---	---	60 $\mu g/m^3$

Primary standards are set to protect human health; secondary standards protect human welfare.

ppm – parts per million.
$\mu g/m^3$ – micro-grams per cubic meter.

Source: New Mexico Air Quality Bureau, June, 1998.

Carbon monoxide (CO) is a colorless, odorless, tasteless gas. It may temporarily accumulate at harmful levels, especially in calm weather during winter and early spring, when fuel combustion reaches a peak and carbon monoxide is chemically most stable due to the low temperatures. CO from natural sources usually dissipates quickly over a large area, posing no threat to human health. Transportation activities, indoor heating, and open burning are among the anthropogenic (i.e., manmade) sources of CO.

Dominant industrial sources of lead (Pb) emissions include waste oil and solid waste incineration, iron and steel production, lead smelting, and battery and lead alkyl manufacturing. The lead content of motor vehicle emissions, which was the major source of lead in the past, has significantly declined with the widespread use of unleaded fuel.

Nitrogen dioxide (NO_2), nitric oxide (NO), and the nitrate radical (NO_3) are collectively called oxides of nitrogen (NO_x). These three compounds are interrelated, often changing from one form to another in chemical reactions, and NO_2 is the compounds commonly measured with ambient air monitors. NO_x is generally emitted in the form of NO, which is partially oxidized to NO_2. The principal anthropogenic source of NO_x is fuel combustion in motor vehicles and power plants. Reactions of NO_x with other atmospheric chemicals can lead to formation of ozone (O_3) and acidic precipitation (acid rain).

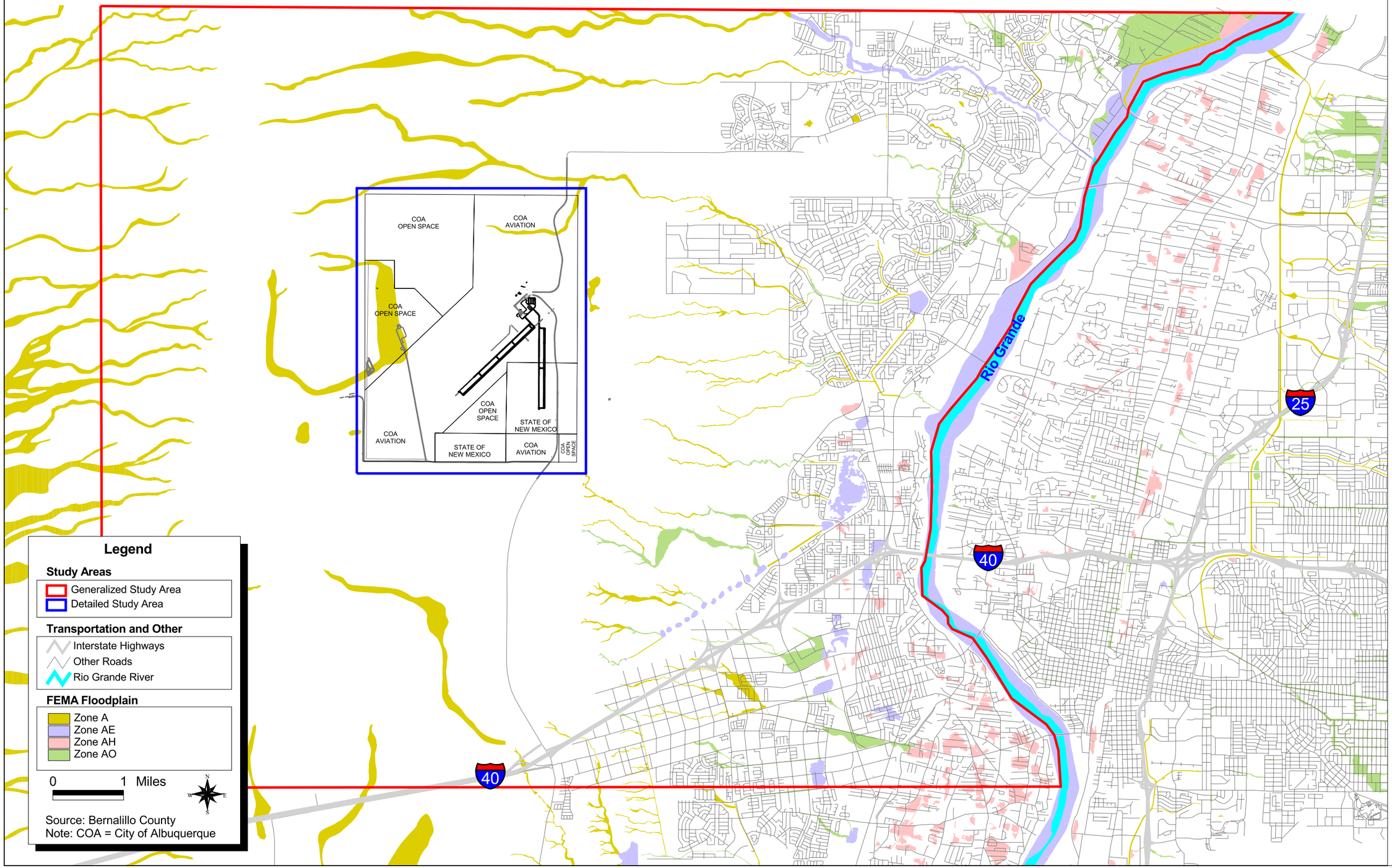


Figure 4.7

FEMA Floodplains

Double Eagle II Airport
Master Plan

Particulate matter is now separated into two different sizes for the purposes of the NAAQS: PM_{10} and $PM_{2.5}$. The nomenclature refers to particulate matter with a diameter of 10 microns (μm) or less and 2.5 μm or less, respectively. $PM_{2.5}$ is considered to be in the respirable (breathing) range, meaning these particles can reach the alveolar region of the lungs and penetrate deeper than PM_{10}. Total suspended particulates (TSP), which have NMAAQS, comprise all particulate matter, with no size cut-off. There are many sources of particulate matter, both natural and anthropogenic.

Ground-level ozone (O_3) is a secondary pollutant, formed from daytime reactions of NO_x and volatile organic compounds (VOCs) rather than being directly emitted by natural or anthropogenic sources. VOCs, which have no NAAQS, are released in industrial processes and from evaporation of gasoline and solvents.

Total reduced sulfur (TRS) encompasses all reduced sulfur compounds including, but not limited to, hydrogen sulfide, methyl mercaptan, dimethyl sulfide, dimethyl disulfide, and other organic sulfide compounds. Sulfur dioxide, sulfur trioxide, and sulfuric acid are not included in the determination of TRS.

Hydrogen sulfide (H_2S) is a natural product of decay, and is commonly a result of decomposition in septic or sewer systems. Some areas with high concentrations of sulfur in their soil also have higher H_2S concentrations. In addition, H_2S, a colorless, flammable gas with a distinctive odor, is used in metallurgy, the manufacture of phosphorous and oil additives, as well as in chemical analysis.

Air quality monitoring is the most reliable means of determining compliance with the NAAQS and NMAAQS. The closest NMED monitor to Double Eagle II Airport for CO concentration is at the Rio Rancho Senior Center, located at 4330 Meadowlark Lane. In 2000, the maximum 8-hour CO level recorded at this monitor was 1.0 ppm. Based on the rural area and the available air quality monitoring data, existing CO levels are likely to be significantly below the Federal 8-hour CO standard of 9 ppm and the state 8-hour CO standard of 8.7 ppm.

4.3.6.1 Attainment/Non-Attainment Designations

Under Title I of the 1990 Clean Air Act Amendments (CAAA), all areas of the state must be designated as attainment or non-attainment with respect to the NAAQS. The Albuquerque/Bernalillo County area is designated as a maintenance area for CO and an attainment area for all other criteria pollutants, indicating no violations of the NAAQS, as shown in Table 4.9. However, a potential change to non-attainment of ozone and PM_{10} for Bernalillo County could occur within the next two years.

Albuquerque/Bernalillo County was originally designated as a non-attainment area for CO in 1978. The number of occasions on which the limit was exceeded decreased over the next several years due to newer, cleaner motor vehicles. Additional measures were implemented at the local level, including No-Burn Nights, an Oxygenated Fuels Program, and a Vehicle Inspection and Maintenance Program. These measures resulted in the number of exceedances decreasing from 70 in 1983 to none in 1992.

After four straight years (1992-1995) without any exceedances, EPA re-designated Albuquerque/ Bernalillo County to maintenance status in 1996, which it is currently designated. Given the maintenance status of CO, the Albuquerque/Bernalillo County is potentially subject to special transportation conformity regulations. Additionally, soil disturbance and authority-to-construct permits may be required.

TABLE 4.9
NAAQS ATTAINMENT STATUS
Double Eagle II Airport
Master Plan Study

Pollutant	Status
Carbon Monoxide (CO)	Maintenance
Lead (Pb)	Not designated
Nitrogen Dioxide (NO_2)	Cannot be classified or better than national standards
Ozone (O_3)	Unclassifiable/Attainment
Particulate Matter with a diameter < 10 µg/m (PM_{10})	Unclassifiable
Particulate Matter with a diameter < 2.5 µg/m ($PM_{2.5}$)	Not designated
Sulfur Dioxide (SO_2)	Better than national standards

Source: 40 Code of Federal Regulations 81.83.

4.3.6.2 Sources of Airport-Related Air Emissions

Airports typically have several types of emissions associated with them because of their common properties (e.g., combustion of fossil fuels in aircraft and motor vehicles, fuel distribution and handling, etc.) Sources of airport-related air emissions are summarized and characterized in Table 4.10.

In general terms, the predominant sources of air emissions at municipal airports are aircraft and motor vehicles traveling to, from, and about the airport site. Other, smaller sources may include aircraft ground service equipment (GSE), fuel storage facilities and transfer operations, heating/cooling units, and waste reduction facilities. Because of the low level of activity at Double Eagle II Airport and its minimal facilities, the generation of air pollutants is not significant relative to other sources in the area.

Dust, smoke, and other forms of particulate matter emissions occur at airports during construction and land clearing activities. Erosion control measures and construction equipment controls are typically used to minimize the effects of fugitive dust and particulate emissions.

4.3.7 Hazardous Materials and Environmental Contamination

Double Eagle II Airport is located in a previously undeveloped area and is surrounded by predominantly vacant and undeveloped lands. The City of Albuquerque Soil Amendment Facility (SAF) is located to the west of the airport. This facility makes compost using pre-tested sludge from the sewer treatment plant, yard waste, and animal wastes from the State Fairgrounds. This facility does not appear to create a recognized environmental concern at Double Eagle II Airport. No off-site sources of environmental concern were identified within several miles of the site.

Two underground storage tanks are located at the airport. These tanks are 20,000-gallon tanks containing aviation fuel and Jet A fuel. The tanks have been inspected by the NMED Underground Storage Tank Bureau and conform to 1998 upgrade standards. Several aboveground tanks are also located at the Bode Aviation and West Mesa FBO facilities located at the airport. No leaking or stained soil was observed during the field investigation. In addition, Bode Aviation and West Mesa conduct maintenance operations at the facilities. Small amounts of oils, waste oils, solvents, and antifreeze are anticipated to be used for these operations. Approximately 30 five-gallon buckets of dry chemicals (Phos Chek - Fire Retardant/Suppressant used to fight forest fires) are located on pallets at the facility.

TABLE 4.10
SOURCES OF AIRPORT-RELATED AIR EMISSIONS
Double Eagle II Airport
Master Plan Study

Sources	Emissions	Characteristics
Aircraft	• CO • HC • NO_x • PM	Exhaust products of fuel combustion that vary greatly depending on engine type, power setting, and period of operation. Significant source of on-site CO and HC emissions. Except for short periods of takeoff and approach, aircraft altitude precludes measurable off-site ground-level impacts.
Motor Vehicles	• CO • HC • NO_x • PM • SO_2	Exhaust products of fuel combustion from patron traffic approaching, departing, and moving about the airport site. Emissions vary greatly depending on vehicle type, distance traveled, operating speed, and ambient conditions. On-site emissions confined to access/egress roadways and parking facilities. Off-site emissions are indistinguishable from those of background traffic.
Ground Service Vehicles	• CO • HC • NO_x • PM • SO_2	Exhaust products of fuel combustion from service trucks, tow tugs, belt loaders, and other portable equipment. Overall, this is a minor source of airport-related emissions.
Fuel Storage and Transfer Facilities	• HC	Formed from the evaporation and vapor displacement of fuel from storage tanks and fuel transfer facilities. Emissions vary with fuel usage, type of storage tank, refueling method, fuel type, vapor recovery, climate, and ambient temperature. Typically, a minor source.
Space Heating and Incineration Facilities	• CO • HC • NO_x • PM • SO_2	Exhaust products of fossil fuel combustion from boilers dedicated to indoor heating requirements and emissions from incinerators used for waste reduction. Emissions are generally well controlled with operational techniques and post-burn collection methods.
Construction Activities	• PM	Dust generated during construction and land-clearing activities released into the air by wind and machinery. The amount of particulate emissions varies with the material type, the amount of area exposed, and meteorology.

Source: URS Corporation, 2001.

4.3.8 Wild and Scenic Rivers

The Wild and Scenic Rivers Act of 1968 provides for the protection and preservation of certain rivers and their immediate environments, which possess outstandingly remarkable recreational, geologic, fish and wildlife, historic, cultural, and other similar values. The Act restricts development within 1,000 feet of rivers designated with the “Wild and Scenic” classification.

Review of the Wild and Scenic Rivers Act of 1968, National Park Service’s Wild and Scenic Rivers list, maps of New Mexico, and the GSA were conducted. Rivers designated as “Wild and Scenic” were analyzed for their proximity to Double Eagle II Airport. The results of this evaluation indicate that there are no Wild and Scenic Rivers located within 1,000 feet of Double Eagle II Airport or within the DSA.

4.3.9 Coastal Zone Management/Coastal Barriers

The Coastal Zone Management Act (CZMA) of 1972 defines "coastal zone" as coastal waters and adjacent shorelines strongly influenced by each other and in proximity to the shorelines of several coastal states, including islands, salt marshes, wetlands, and beaches.

The Coastal Barrier Resource Act (CBRA) of 1982 designates various undeveloped coastal barrier islands, depicted by specific maps called Coastal Barrier Resource System Units for inclusion in the Coastal Barrier Resource System. Coastal barriers are unique landforms that provide protection for diverse aquatic environments and serve as the mainland's first line of defense against the impacts of severe coastal storms and erosion (U.S. Fish & Wildlife Service, 1999). Areas designated as coastal barrier resources are ineligible for direct or indirect Federal financial assistance that might support development.

Double Eagle II Airport is not located in a coastal zone county and is therefore not included in the Coastal Zone Management Program. In addition, Double Eagle II Airport is located inland, and any development at the airport would not impact any areas designated as coastal barriers as identified in the CBRA.

4.4 NATURAL ENVIRONMENT

4.4.1 Biotic Communities

The DSA is within the Great Basin Grassland biotic community. The area lies on open and exposed mesatop lands that are situated above the Rio Puerco valley to the west and the Rio Grande valley to the east. The lands are primarily comprised of cool desert scrub and shortgrass prairies. The Great Basin grasslands have a mean annual precipitation of approximately 1 to 11.8 inches and a mean annual growing season of 125 to 200 days. Predominant grasses include Blue grama *(Bouteloua gracilis*), and other gramas *(B. curtipendula B. eriopoda, B. barbata)*, Indian Rice grass (*Oyzopsis hymenoides*), Galleta *(Pleuraphis jamesii)* and Burro *(Scleropogon brevifolius)* grass. Scattered throughout the grassland are shrubs such as four-wing saltbush *(Atriplex canescens)*, sagebrush *(Artemisia)*, and snakeweed *(Gutierrezia)*. Mammals that have historically utilized these grasslands include large mammals such as Pronghorn antelope *(Antilocapra americana)* and domestic livestock. Smaller mammals include prairie dogs *(Cynomys ludovicianus and Cynomys gunnisoni)*, coyotes *(Canis latrans)*, Swift fox *(Vulpes velox)*, and ground squirrels *(Spermophilus spilosoma)*. Many species such as the Burrowing Owl *(Athene cunicularia hypugaea)*, Corn Snake *(Elaphe gutata),* and Prairie Rattlesnake *(Crotalus viridis viridis)* are closely integrated with the grassland burrows of prairie dogs and may be found within the DSA.

4.4.2 Wetlands

Section 404 of the Clean Water Act requires regulation of discharges of dredged or fill material into Waters of the United States. The U.S. Army Corps of Engineers (USACE) has primary responsibility for implementing, permitting, and enforcing the provisions of Section 404. The 1987 USACE Wetland Delineation Manual defines wetlands as:

> "Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (33 CFR 328.3(b) 1986)."

The USACE utilizes three criteria to determine the presence of wetlands: hydrophytic vegetation, hydric soils, and hydrological features.

The NRCS Soil Survey for Bernalillo County was reviewed to determine whether or not there are hydric soils within the DSA. The USGS quadrangle map (The Volcanoes, 1992), and the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory map (Volcano Ranch, 1976) were also reviewed for surface features and designated wetlands. In addition, a field investigation of the DSA was conducted on May 30, 2001 to determine if any areas within the DSA are dominated by hydrophytic vegetation, hydric soils, or hydrological features.

Based on this evaluation, it was determined that there are no areas within the DSA that meet the USACE definition of "wetlands." Therefore, no jurisdictional wetlands are located within the DSA.

4.4.3 Threatened and Endangered Species

The USFWS web site provides a listing of Federally endangered, threatened, and species of special concern that may be found in Bernalillo County. In addition, the New Mexico Department of Game and Fish (NMGF) provides the New Mexico Wildlife of Concern status listing for threatened, endangered, sensitive, and endemic species for the State of New Mexico and Federal listings for threatened endangered, candidate, proposed and species of concern that may be found in Bernalillo County. Federal listed "endangered" and "threatened" plant and animal species are protected by the Federal government pursuant to the Endangered Species Act of 1973, as amended. Species of Concern are taxa for which there is some evidence of vulnerability, but for which there are not enough data to support listing proposals at this time, and for which there is no legal documentation. State endangered and threatened species are legally protected by the NMGF. The state "sensitive" classification is informal (no legal protection) and assigned to species considered to be rare.

The following briefly describes the Federal and state species that are afforded protection and which may be found within the county.

4.4.3.1 Bald Eagle (Haliaeetus leucocephalus)

The bald eagle is Federally and state listed as threatened. They generally are associated with medium to large perennial streams, rivers, and other water bodies where fish is the preferred prey base. Bald eagles are known to migrate through and nest in New Mexico where they are generally associated with the Rio Grande and its tributaries. The potential for occurrence within the GSA is probable in the corridor of the Rio Grande. The potential for nesting occurrences in the DSA is non-existent as they are associated generally with riparian habitats; however, there is the possibility for incidental siting.

4.4.3.2 Black-footed ferret (Mustela nigripes)

The black-footed ferret is usually associated with prairie dog towns in grassland plains, semi-arid grasslands, and adjacent mountain basins. It historically occurred over most of New Mexico. The last confirmed sighting was in 1934. The decline in black-footed ferret populations was due mainly to historic extermination of prairie dogs, habitat alterations, and major plague outbreaks in the prairie dog populations. No black-footed ferrets are known to exist other than the captive and reintroduced populations in Wyoming, Montana, and South Dakota. The species is listed as endangered by the USFWS. The black-footed ferret could potentially occur anywhere there are prairie dog colonies of sufficient size; however, it is listed by NMGF as apparently no longer occurring in Bernalillo County.

4.4.3.3 Rio Grande silvery minnow (Hybognathus amarus)

The Rio Grande silvery minnow is a small, heavy-bodied fish that is round to ovate in cross-section and rarely exceeds 100 mm (about 4 inches) in length. The silvery minnow is Federally listed as endangered. The Rio Grande silvery minnow was formerly one of the most widespread and abundant fish species in the Rio Grande basin (mainly the Rio Grande, Rio Chama, and Pecos Rivers) of New Mexico, Texas, and Mexico. This fish species was distributed from northern New Mexico near Espanola in the Rio Grande and Pecos River near Santa Rosa to the Gulf of Mexico. The only records from Mexico are from the Rio Grande. The potential for occurrence within the GSA is probable in the Rio Grande only. The potential for occurrence in the DSA is non-existent because there is no perennial watercourse connecting to the Rio Grande.

4.4.3.4 Mexican spotted owl (Strix occidentalis lucida)

The Mexican spotted owl is listed as Federally threatened and state listed as New Mexico sensitive. It is found in mountainous areas with dense, old growth forest; however, they have been reported from canyon systems with little or no tree cover where the microclimate is similar to that of the old growth forest. The potential for occurrence within the GSA/DSA is non-existent as there is not suitable habitat for the bird.

4.4.3.5 Mountain plover (Charadrius montanus)

The Mountain plover is listed as Federally threatened and state listed as New Mexico sensitive. The mountain plover is associated with shortgrass and shrub-steppe landscapes throughout its breeding and wintering range. Historically, on the breeding range, it occurred on nearly denuded prairie dog towns and in areas of major bison concentrations. They are considered to be strongly associated with sites of heaviest grazing pressure, to the point of excessive surface disturbance. The mountain plover is also attracted to manmade landscapes (e.g., sod farms, cultivated fields) that mimic the natural habitat associations. Nesting mountain plovers are reported from Canada to Mexico. Most winter in California; fewer wintering plovers are reported from Arizona, Texas, and Mexico. There are prairie dog colonies located in the GSA/DSA; therefore, the potential for occurrence in the GSA/DSA is possible at these locations.

4.4.3.6 Southwestern willow flycatcher (Empidonax traillii extimus)

The southwestern willow flycatcher occurs in riparian habitats along rivers, streams, or other wetlands, where dense growths of willows, arrowweed, buttonbush, boxelder, and alder are present, often with a scattered overstory of cottonwood. It nests in thickets of trees and shrubs approximately 13 to 23 feet or more in height, with dense foliage from approximately 13 feet above ground and often a high canopy cover percentage. The species almost always nests near surface water or saturated soil. The breeding range of the southwestern willow flycatcher includes southern California, southern Nevada, southern Utah, Arizona, New Mexico, and western Texas. The bird most likely winters in Mexico, Central America, and perhaps northern South America. The species was listed as Federally endangered by the USFWS on February 27, 1995. New Mexico also listed this species as endangered. The potential for occurrence within the GSA is possible in the corridor of the Rio Grande. The potential for occurrence in the DSA is low to non-existent because there is no suitable riparian habitat available for the bird in the DSA.

4.4.3.7 Whooping crane (Grus americana)

The whooping crane breeds mainly at Wood Buffalo National Park, Canada and winters mainly along the gulf coast of Texas at the Arkansas National Wildlife Refuge. A few whooping cranes that were raised by foster parents (sandhill cranes) at Gray Lake, Idaho migrate with the sandhill cranes to the Rio Grande Valley, New Mexico where they are Federally listed as nonessential experimental. Whooping cranes may move seasonally across the Rio Grande Corridor during their spring and fall migrations; however, they would be considered rare visitors to the area. Potential for occurrence within the GSA is possible in the corridor of the Rio Grande only. The potential for occurrence in the DSA is non-existent as it is outside the Rio Grande corridor.

4.4.4 Natural Resources

According to the New Mexico Energy, Minerals, and Natural Resources Department there are currently 16 mines, mills, pits, and quarries located in Bernalillo County. Natural resources processed at these locations include, gypsum, scoria, sand and gravel, pumice, and limestone.

During a field investigation, at least one natural gas pump well (although potentially not functional) was observed to be located within the DSA.

There are no other known sources of natural resources within the DSA.